PSAT MAth Addition topics ch12 Cheat Sheet

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Geometry references

References	
circle	A=pir^2; C=2pir: 2pi=360
rectangular	A=lw
trangle	A=1/2bh
	$c^2=a^2+b^2$; 3-4-5,5-12-13
	s-s-ssqrt(2); x-xsqrt(3)-2x; 180=sum
rectangular prism	V=lwh; sa=2(lw +lh+hw)
cyclinder	V=pi*r^2h; sa=2pi rh +pirr
cone	V=pi*r^2h/3
triangular prism	V=lwh/3
sphere	V=4pi*r^3/3; sa=4pirr

Line and angles

LINEs and ANGLES	
line,ray,line segment	0,1,2 ends
supplementary angle	180=angle+suppleme-ntary angle
vertical angle	cross line
big/small angle	parallel line

Being Aggressive on Geometry Problems: whenever you have
a diagram, ask yourself What else do I know? write it down anyway.

ETS is also fond of disguising familiar figures within more complex
shapes by extending lines, overlapping figures, or combining several
basic shapes. So be on the lookout for the basic figures hidden in
complicated shapes.

Triangles

QUANDRILATERAL	
parallelogram	quadrilateral in which opposite sides are parallel
rectangule	a parallelogram in which all angles equal 90º
square	rectangle in which all angles and all sides are equal
TRIANGLES	
180 rules	A=bh/2
isosceles triangles	s1=s2
equilateral	60
pythagorean therorem	a2+b2=c2
	3;4;5, 5:12:13 rues
special right trangles	30-60-90: x-sqrt(3)x-2x (hypotenuse)
	45-45-90:x-x-sqrt(2)x
SOHCAHTOA	opposite, adjacent,hyp-otenuse
	SOH:sine=opposite/hyp-otenuse
	CAH:cos=Adjacent/hypo-tenuse
	TOA:tangent=opposite/-Adjacent
similar triangles	same shape(angles)
	diff size, same corres-ponding side ratio

Circles

Circle	radius
	diameter
	chord: any line segment in side circle
	arc:part of circumference(edge)
	circumference=2pi *radius
	area=pirr
Propor-tionality	Arc measure is proportional to interior angle measure, which is proportional to sector area.
	An interior angle is an angle formed by two radii.
	A sector is the portion of the circle between the two radii.
tangents	OPN=90;oQN=90; PNQ=45,
Equation	(x,y) is point of circle,(h,k) is the center, r is radius
	xy plane: $(x-h)^2 + (y-k)^2=r^2$

What is the center of a circle with equation x2 + y2 – 2x + 8y + 8 = 0 ?

Volume

ref to equation of volumes

Plug in on Genometry

(Hidden)variable in choice answer

180 rule for triangle

outside angle=inner angle1+ingger angle2

A rectangular box is half as long as it is wide and one-third as wide as it is
tall. If the volume of the box is 96, then what is its surface area?

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imaginary and complex

sqrt(-1)	italicized i
i^n	i^1=i; i^2=-1; i^3=-i; i^4=1
	i^5=i; i^6=-1; i^7=-i; i^8=1
complex number	a+bi
	treat i as variable when do arithmetic
	add/subtraction (distribute the minus sign)
	multiplication: FOIL

Summary

Be sure to review your basic geometry rules before the test; often, problems hinge on knowing that vertical angles are equal or that the sum of the angles in a quadrilateral is 360°.

On all geometry problems, draw figures out and aggressively fill in everything you know.

When two parallel lines are cut by a third line, the small angles are equal, the big angles are equal, and the sum of a big angle and a small angle is 180°.

The perimeter of a rectangle is the sum of the lengths of its sides. The area of a rectangle is length × width.

The perimeter of a triangle is the sum of the lengths of its sides. The area of a triangle is 1/2 base × height.

Knowing the Pythagorean Theorem, common right triangles (such as 3-4-5 and 5- 12-13), and special right triangles (45°-4-5°-90° and 30°-60°-90°) will help you figure out angles and lengths in a right triangle.

For trigonometry questions, remember SOHCAHTOA: sine=opposite/hypotenuse; cosin=adjacent/hypotenus; tangent=opposite/adjacent

Summary (cont)

Similar triangles have the same angles and their lengths are proportional.

The circumference of a circle is 2πr. The area of a circle is πr2.

Circles that show an interior angle (an angle that extends from the center of the circle) have proportionality. The interior angle over the whole degree measure (360°) equals the same fraction as the arc enclosed by that angle over the circumference. Likewise, both of these fractions are equal to the area of the segment over the entire area of the circle.

When you see a line that is “tangent to” a circle, remember two things: The line touches the circle at exactly one point. The radius of the circle that intersects the tangent line is perpendicular (90°) to that tangent line.

The formulas to compute the volumes of many three-dimensional figures are supplied in the instructions at the front of both Math sections.

When plugging in on geometry problems, remember to use your knowledge of basic geometry rules; e.g., there are still 180° in a triangle when you’re using Plugging In.

The imaginary number i = , and there is a repeating pattern when you raise i to a power: i, –1, –i, 1. When doing algebra with i, treat it as a variable, unless you are able to substitute –1 for i2 when appropriate.